

# Clause-embedding in Japanese : *to* vs. *koto* alternation\*

Kiyomi KUSUMOTO

## 1. Two types of complement of *explain*

Kiparsky and Kiparsky (1970) observe that the verb *explain* may take two semantically different types of complement clauses. Compare the following :

- ( 1 ) a. I explained Adam's refusing to come to the phone.
- b. I explained that he was watching his favorite TV show.

They claim that these two complement clauses are semantically different.

In (a), the subordinate clause refers to a proposition regarded as a fact. *Explain*, in this case, means 'give reason for'. When the object is a *that*-clause, as in (b), it can be read as non-factive, with *explain that S* understood as meaning 'say that S to explain X'. (164)

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A similar observation is made in Pietroski (2000).

- (2) a. John explained the fact that Fido barked.  
       b. John explained that Fido barked.

The complement introduced by *the fact that* in (2a) behaves in a similar manner as the gerund in (1) in that what John did was to explain why Fido barked, by claiming, for instance, that Fido saw a burglar. Pietroski calls this the ‘expalanandum’ – the thing explained. The complementizer *that* introduces what Pietroski calls ‘explanans’ – the explanation given. In this sense the sentence is used in response to the question why the burglar ran off.

Japanese verb *setumeisuru* ‘explain’ behaves similarly in this respect.

- (3) a. Taroo-wa Hanako-ga tikoku-si-ta koto-o      setumeisi-ta  
       T-top      H-nom      late-do-past KOTO-acc explain-past  
       ‘Taroo explained the fact that Hanako was late’  
       b. Taroo-wa Hanako-ga tikoku-si-ta to      setumeisi-ta  
       T-top      H-nom      late-do-past TO explain-past  
       ‘Taroo explained that Hanako was late’

When the complementizer *koto* together with the accusative case marker *o* is used, the clausal complement acts as an explanandum, and so what Taroo did was to give reason for the fact that Hanako was late. When another type of compementizer, *to*, is used, what Taroo said is approximately that Hanako was late.

What is interesting is that the Japanese *setumeisuru*, unlike *explain*, may simultaneously take an explanandum and an explanans, as shown

below :

- (4) a. Taroo-wa [densya-ga okure-ta to] [Hanako-ga tikoku-si-ta  
T-top train-nom late-do-past TO H-nom late-do-past  
koto]-o setumeisi-ta  
KOTO-acc explain-past
- b. Taroo-wa [Hanako-ga tikoku-si-ta koto]-o [densya-ga  
T-top H-nom late-do-past KOTO-acc train-nom  
okure-ta to] setumeisi-ta  
late-past TO explain-past  
‘Taroo explained the fact that Hanako was late (by saying) that  
the train was late’

As the two example sentences above show, the *to*-CP may either precede or follow the *koto*-CP.

This paper investigates the syntactic and semantic properties of predicates like *setumeisuru* which simultaneously take two clausal complements. We argue that verbs like *setumeisuru* enter into double object constructions and may take two argumental CPs.

## 2. Two types of predicates that take two CPs

We identify two classes of predicates among those take two clausal complements. One classes I call predicates of argumentation. This class includes the verb *setumeisuru* introduced above, as well as *hihansuru* ‘criticize’ and *ronziru* ‘argue’.

- ( 5 ) a. Taroo-wa Hanako-wa sekininkan-ni kaketeiru to  
 T-top H-top responsibility-dat lack TO  
 kaigi-ni de-nakat-ta koto-o hihansi-ta  
 meeting-dat attend-neg-past KOTO-acc criticize-past  
 ‘Taroo criticized Hanako for not attending the meeting (by  
 saying) that she has no sense of responsibility’
- b. Taroo-wa keizai-kooka-ga ookikat-ta to sei-hu-ga  
 T-top economy-effect-nom big-past TO government-nom  
 yunyuu-o kaikin-si-ta koto-o ronji-ta  
 import-acc lift.a.ban-do-past KOTO-acc argue-past  
 ‘Taroo argued, regarding the fact that the government lifted a  
 ban on the import, that its economic effects were large’

The other class is what is called emotive factives. As with predicates of argumentation, this class of verbs also allows both orders of the *to*- and *koto*-CPs.

- ( 6 ) a. Taroo-wa zibun-ga baka-dat-ta to soko-e it-ta  
 T-top self-nom fool-be-past TO there-to go-past  
 koto-o kookaisi-ta  
 KOTO-acc regret-past
- b. Taroo-wa soko-e it-ta koto-o zibun-ga  
 T-top there-to go-past KOTO-acc self-nom  
 baka-dat-ta to kookaisi-ta  
 fool-be-past TO regret-past  
 ‘Taroo regretted that he went there, (saying that) he was  
 foolish’

Other emotive factives include *yorokobu* ‘be glad’, *odoroku* ‘be surprised’ and *haziru* ‘be ashamed’.

- (7) a. Hanako-wa Taroo-ga saigo-made yoku nage-ta to  
 H-top T-nom last-till well pitch-past TO  
 bokoo-ga yusyoo-si-ta koto-o yorokon-da  
 alma.mater-nom win-do-past KOTO-acc be.glad-past  
 ‘Hanako was glad that her school won the championship (by saying) that Taroo pitched well till the last inning’
- b. Hanako-wa kiseki-ga oki-ta to Taroo-ga  
 H-top miracle-nom happen-past TO T-nom  
 seikan-si-ta koto-ni odoroi-ta  
 return.safe-past KOTO-acc be.surprized-past  
 ‘Hanako was surprised that Taro returned safe (by saying) that a miracle happneded’
- c. Hanako-wa zibun-no ninsiki-ga hujyuubun-dat-ta to  
 H-top self-gen understanding-nom not.enough-be-past TO  
 husei-o si-ta koto-o hazi-ta  
 illegality-acc do-past KOTO-acc be.shamed-past  
 ‘Hanako was ashamed that she acted illegally (by saying) that she didn’t think enough’

### 3. Syntactic status of *to*-CPs : *to*-CPs are arguments

What is the status of these two CPs? Are they both arguments of the predicate? Or is just one of them an argument and the other an adjunct? In translating sentences with two CPs into English, *koto*-CPs behave like arguments while *to*-CPs are translated as adjuncts introduced by *by*

saying that.

Saito (2015 ; p.34) suggests the possibility that this is exactly what happens in Japanese. Saito examines the contrast between *to*-CPs and *no*-CPs, rather than *koto*-CPs. Saito says :

It should be noted that a *to*-headed CP can co-occur with factive verbs as adverbial clauses as in (i).

- (i) Taroo-wa zibun-ga baka-dat-ta to soko-e it-ta  
 T-top self-nom fool-be-past TO there-to go-past  
 no-o kookaisi-ta  
 NO-acc regret-past

‘Taroo regretted that he went there (saying that) he was foolish’

In cases like these, it is still the *no*-headed CP that the matrix verb selects.

Note that our example in (6)a is like Saito’s (i) above, except that the nominalizer *no* is used in the latter instead of the noun *koto*. Assuming that *no*-CPs and *koto*-CPs behave similarly, we may analyze *to*-CPs as adjuncts.

In what follows, we examine the behavior of *to*-CPs and conclude that *to*-CPs are best analyzed as arguments of these verbs.

### 3.1. To-CPs are not direct quotations<sup>1</sup>

In this subsection, we demonstrate that *to*-CPs are not necessarily direct quotations. First, the pairs of examples in (8) and (9) show that indexical expressions in the direct quotations are changed into non-indexical ones.

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1 See Schlenker 1999, Anand 2006, Oshima 2006 for test distinguishing direct and indirect speech.

- ( 8 ) a. Taroo-wa “boku-ga bakadat-ta” to kookaisi-ta  
 T-top I-nom foolish-past TO regret-past  
 Taroo regretted, (saying) “I was foolish”
- b. Taroo-wa zibun-ga bakadat-ta to kookaisi-ta  
 T-top self-nom foolish-past TO regret-past  
 Taroo regretted that he(lit. self) was foolish
- ( 9 ) a. kinoo Taroo-wa “saku-ban doroboo-ga hait-ta”  
 yesterday T-top last-night burglar-nom enter-past  
 to setumeisi-ta  
 TO explain-past  
 Yesterday, Taroo explained, “A burglar broke in last night”
- b. kinoo Taroo-wa ototoi-no ban  
 yesterday T-top the.day.before.yesterday-gen night  
 doroboo-ga hait-ta to setumeisi-ta  
 burglar-nom enter-past TO explain-past  
 Yesterday, Taroo explained that a burglar broke in two nights  
 ago

Second, *de re* description can occur in *to*-CPs.

- (10) a. Tyuugaku-zidai Taroo-wa touzi-no kanozyo-ga  
 junior.high.school-era T-top then-gen girlfriend-nom  
 hanabi-taikai-ni yukata-o kite-kite-kure-past to  
 firework-festival-to yukata-acc wear-come-give-past TO  
 yorokon-da  
 be.glad-past  
 ‘In his junior high school days, Taroo was glad that his

girlfriend then came to fireworks wearing a yukata’

- b. (Taroo has been a friend with the current prime minister and they have been arrested by the police in their high school days.)

sonotoki Taroo-wa syusyoo-ni                      sosenoka-sare-ta to  
 then      T-top      prime.minister-by incite-cause-past TO  
 setumeisi-ta  
 explain-past  
 ‘Taroo explained that

Lastly, long-distance *wh*-extraction is not allowed out of direct quotations, as shown below.

- (11) a. Who did John say that he met?  
 b. \*Who did John say, “I met”?

Japanese is a *wh*-in-situ language, and *wh*-expressions do not overtly move, but the expression *dare* ‘who’ that appears inside the *to*-CPs can take matrix scope.

- (12) a. Taroo-wa dare-ga bakadat-ta to kookaisi-ta no  
           T-top      who-nom foolish-past TO regret-past Q  
           ‘Who did Taroo regret was foolish?’  
 b. Taroo-wa dare-ga tikokusi-ta to setumeisi-ta no  
           T-top      who-nom late-past    TO explain-past Q  
           ‘Who did Taroo explain was late?’

### 3.2. *To*-CPs are not islands

We now show that *to*-CPs are not adjuncts by examining long-distance



scrambling out of *to*-CPs. To exclude the possibility that what looks like a scrambled phrase is base-generated in the surface position, we scramble an NPI that is licensed by the embedded negation, and the sentence is acceptable.

- (13) a. Taroo-wa Hanako-ga dare-kara-mo okane-o  
           T-top     H-nom     who-from- MO money-acc  
           uketora-nakat-ta to setumeisi-ta  
           receive-neg-past TO explain-past  
           ‘Taroo-explained that Hanako-did not receive money from  
           anybody’
- b. dare-kara-mo [Taroo-wa Hanako-ga t okane-o  
           who-from- MO T-top     H-nom     money-acc  
           uketora-nakat-ta to] setumeisi-ta  
           receive-neg-past TO explain-past

This contrasts with scrambling out of *koto*-CPs.

- (14) a. Taroo-wa Hanako-ga dare-kara-mo okane-o  
           T-top     H-nom     who-from- MO money-acc  
           uketora-nakat-ta koto-o setumeisi-ta  
           receive-neg-past KOTO-acc explain-past  
           ‘Taroo-explained the fact that Hanako-did not receive money  
           from anybody’
- b.\*? dare-kara-mo [Taroo-wa Hanako-ga t okane-o  
           who-from-MO T-top     H-nom     money-acc  
           uketora-nakat-ta koto-o] setumeisi-ta  
           receive-neg-past KOTO-acc explain-past

Another piece of evidence for the argumenthood of *to*-CPs concerns with an adjunct *wh*-phrase such as *naze* ‘why’. In (15)a, *naze* appears inside the *to*-CP, but takes the matrix scope.

- (15) a. Anata-wa [koibito-ga      naze tumetaku-nat-ta to]  
           you-top    girlfriend-nom why cold-become-past TO  
           setumeisi-ta no  
           explain-past Q  
           ‘Why did your girlfriend start act coldly to you, according to  
           your explanation?’
- b.\*Anata-wa [koibito-ga      naze tumetaku-nat-ta koto]-o  
           you-top    girlfriend-nom why cold-become-past KOTO-acc  
           setumeisi-ta no  
           explain-past Q

The same interpretation is impossible when it appears in a *koto*-CP, as in (15)b.

### 3.3. Not derived as raising-to-object

One might argue that one of the CPs in these two CP examples may be derived from the so-called raising-to-object or prolepsis. Compare the following examples.

- (16) a. Taroo-wa [Hanako-ga tensai-da to]      it-ta  
           T-top      H-nom      genius-be-past TO say-past
- b. Taroo-wa Hanako-o tensai-da to      it-ta  
           T-top      H-acc      genius-be-past TO say-past  
           ‘Taroo said that Hanako was a genius’

In (16)a, *Hanako* receives the nominative case as it is the subject of the embedded predicate *tensai-da* ‘be a genius’. In (16)b, the same NP is marked with the accusative case, but their interpretations are roughly the same.

Sentences like (16)b are often analyzed as the accusative marked NP sitting in a position in the matrix clause and the subject of the embedded clause having a null element, as in (17).

(17) Taroo-wa Hanako-o [ e tensai-da to] it-ta

Now consider the following example, where the embedded subject is a clause. This sentential subject may accompany an accusative case as in (18)b.

- (18) a. Taroo-wa [[soko-e it-ta koto]-ga bakadat-ta to]  
           T-top       there-to go-past KOTO-nom foolish-past TO  
           kookaisi-ta  
           regret-past
- b. Taroo-wa soko-e it-ta koto-o bakadat-ta to  
           T-top       there-to go-past KOTO-acc foolish-past TO  
           kookaisi-ta  
           regret-past  
           ‘Taroo regretted that going there was foolish’

The (b) sentence may be analyzed as a raising-to-object construction in the same way as that with an NP subject, as below.

(19) Taroo-wa [soko-e it-ta koto-o] [ e bakadat-ta to] kookaisi-ta

Now the sentence looks as if the verb *kookaisuru* ‘regret’ takes two object CPs.

We do not think that this is the right way to analyze sentences under discussion. First, our examples are slightly different from sentences like (19). In (19) and other examples that have been analyzed as a raising-to-object construction, there is a gap in the CP clause which is co-referential with the object. When there is no such gap, the sentence becomes ungrammatical.

(20)\* Taroo-wa Hanako-o Ziroo-ga tensai-da to it-ta

T-top H-acc Z-nom genius-be-past TO say-past

‘Taroo says of Hanako that Ziroo is a genius’

Examples we have been examining have no such gaps. Some relevant examples are repeated below.

(21) a. Taroo-wa [soko-e it-ta koto-o] [zibun-ga

T-top there-to go-past KOTO-acc self-nom

baka-dat-ta to] kookaisi-ta

fool-be-past TO regret-past

‘Taroo regretted that he went there (saying that) he was foolish’

b. Taroo-wa [Hanako-ga tikoku-si-ta koto-o] [densya-ga

T-top H-nom late-do-past KOTO-acc train-nom

okure-ta to] setumeisi-ta

late-past TO explain-past

‘Taroo explained the fact that Hanako was late (by saying) that the train was late’

We can see from these examples that two CPs are not related through a certain gap. Another relevant data is regarding the word order. In a raising-to-object construction, an accusative marked NP always precedes a clause, and the reversed word order results in ungrammaticality.

- (22) a. Taroo-wa Hanako-o tensai-da to it-ta  
           T-top      H-acc   genius-be   TO say-past  
           'Taroo said that Hanako was a genius'  
       b. \*Taroo-wa tensai-da to Hanako-o it-ta

On the other hand, as mentioned above, our examples allow both word orders.

- (23) a. Taroo-wa [soko-e it-ta koto]-o      [zibun-ga  
           T-top      there-to go-past KOTO-acc self-nom  
           baka-dat-ta to] kookaisi-ta  
           fool-be-past TO regret-past  
       b. Taroo-wa [zibun-ga baka-dat-ta to] [soko-e it-ta  
           T-top      self-nom fool-be-past TO there-to go-past  
           koto]-o      kookaisi-ta  
           KOTO-acc regret-past  
           'Taroo regretted that he went there (saying that) he was foolish'

We conclude that two CPs in our examples are independent of each other and not to be analyzed as a raising-to-object construction.

#### 4. *To*, *koto* and factivity

In this section, we examine the semantics of *to*- and *koto*-CPs regarding factivity. In the literature of factivity in Japanese, it is suggested that factivity strongly correlates with the choice of the complementizers. For instance, factive predicates typically take *koto*- and *no*-CPs while non-factive predicates take *to*-CPs (Kuno 1973, McCawley 1978 among others).

*Iwu* ‘say’ is a non-factive predicate and it is only compatible with *to*-CPs.

- (24) a. Taroo-wa Hanako-ga ryokoo-ni it-ta    to    it-ta  
           T-top     H-nom     trip-to     go-past TO say-past  
           ‘Taroo said that Hanako went on a trip’  
       b. \*Taroo-wa Hanako-ga ryokoo-ni it-ta    koto-o     it-ta  
           T-top     H-nom     trip-to     go-past KOTO-acc say-past

*Wasureru* ‘forget’ is a factive verb and *koto*-CPs but not *to*-CPs are allowed.

- (25) a. \*Taroo-wa Hanako-ga ryokoo-ni it-ta    to    wasuretei-ta  
           T-top     H-nom     trip-to     go-past TO forget-past  
           ‘Taroo said that Hanako went on a trip’  
       b. Taroo-wa Hanako-ga ryokoo-ni it-ta    koto-o     wasuretei-ta  
           T-top     H-nom     trip-to     go-past KOTO-acc forget-past

But *to* vs. *koto* alternation is found in many other predicates. For instance, *sitteiru* ‘know’ accepts both complementizers, as shown below :

- (26) a. Taroo-wa Hanako-ga kinzyo-ni sundeir-u to sitteir-u  
           T-top     H-nom     neighbor-at live-pres TO know-pres  
       b. Taroo-wa Hanako-ga kinzyo-ni sundeir-u koto-ositteir-u  
           T-top     H-nom     neighbor-at live-pres KOTO-acc know-pres  
           ‘Taroo knows that Hanako lives in his neighborhood’

Whether the verb takes a *to*-CP or a *koto*-CP, it gives rise to a factive inference, as the following examples show :

- (27) a. #Taroo-wa taiyoo-ga tikyuu-no mawari-o mawatteir-u  
           T-top     sun-nom earth-gen round-acc turn-pres  
           to sitteir-u  
           TO know-pres  
       b. #Taroo-wa taiyoo-ga tikyuu-no mawari-o mawatteir-u  
           T-top     sun-nom earth-gen round-acc turn-pres  
           koto-acc sitteir-u  
           KOTO-acc know-pres  
           ‘Taroo knows that the sun goes round the earth’

*Sinziteiru* ‘believe’ also allows both complementizers.

- (28) a. Taroo-wa taigaasu-ga kat-u to sinziteir-u  
           T-top     Tigers-nom win-pres TO believe-pres  
       b. Taroo-wa taigaasu-ga kat-u koto-o sinziteir-u  
           T-top     Tigers-nom win-pres KOTO-acc believe-pres  
           ‘Taroo believes that the Tigers will win’

Unlike *sitteiru* ‘know’, *sinziteiru* does not give rise to a factive inference

irrespective of the choice of the complementizers.

- (29) a. Taroo-wa taiyoo-ga tikyuu-no mawari-o mawatteir-u  
           T-top      sun-nom earth-gen round-acc turn-pres  
           to   sinziteir-u  
           TO believe-pres  
       b. Taroo-wa taiyoo-ga tikyuu-no mawari-o mawatteir-u  
           T-top      sun-nom earth-gen round-acc turn-pres  
           koto-acc   sinziteir-u  
           KOTO-acc believe-pres  
           ‘Taroo believes that the sun goes round the earth’

Lastly, predicates like *manabu* ‘learn’ is of the third type among those that allow both *to*- and *koto*-CPs.

- (30) a. Taroo-wa nihongo-ga muzukasi-i      to   manna-da  
           T-top      Japanese-nom difficult-pres TO learn-past  
           ‘Taroo learned that Japanese is difficult’  
       b. Taroo-wa nihongo-ga muzukasi-i      koto-o manna-da  
           T-top      Japanese-nom difficult-pres KOTO-acc learn-past  
           ‘Taroo learned the fact that Japanese is difficult’

With this class of predicates, the choice of different complementizers results in difference in the factivity inference.

- (31) a. Taroo-wa taiyoo-ga tikyuu-no mawari-o mawatteir-u  
           T-top      sun-nom earth-gen round-acc turn-pres



*to* manan-da

TO learn-past

‘Taroo learned that the sun goes round the earth’

b.#Taroo-wa taiyoo-ga tikyuu-no mawari-o mawattein-u

T-top sun-nom earth-gen round-acc turn-pres

koto-acc manan-da

KOTO-acc learn-past

‘Taroo learned the fact that the sun goes round the earth’

The behavior of these three types of predicates show that the factivity inference is not derived from the semantics of predicates alone, nor does it solely depend on the semantics of *koto*.

Now let us examine the factivity inference of predicates under discussion. As mentioned above, predicates of argumentation may take both *to*- and *koto*-CPs.

(32) a. Taroo-wa Hanako-ga tikokusi-ta *to* setumeisi-ta

T-top H-nom late-past TO explain-past

‘Taroo explained that Hanako was late’

b. Taroo-wa Hanako-ga tikokusi-ta koto-o setumeisi-ta

T-top H-nom late-past KOTO-acc explain-past

‘Taroo explained the fact that Hanako was late’

The following examples show that the factivity inference of the verb *setumeisuru* is dependent of the choice of the complementizers.

(33) a. Taroo-wa taiyoo-ga tikyuu-no mawari-o mawattein-u

T-top sun-nom earth-gen round-acc turn-pres

*to* setumeisi-ta

TO explain-past

‘Taroo learned that the sun goes round the earth’

b.#Taroo-wa taiyoo-ga tikyuu-no mawari-o mawatteir-u

T-top sun-nom earth-gen round-acc turn-pres

koto-o setumeisi-ta

KOTO-acc explain -past

‘Taroo learned the fact that the sun goes round the earth’

(34) a. Taroo-wa densya-ga okure-ta *to* setumeisi-ta ga,

T-top train-nom late-past TO explain-past but

zissai-wa densya-no tien-wa nakat-ta

fact-top train-gen delay-top neg-past

‘Taroo explained that the train was delayed, but in fact there was no delay’

b.#Taroo-wa densya-ga okure-ta koto-o setumeisi-ta ga,

T-top train-nom late-past KOTOacc explain-past but

zissai-wa densya-no tien-wa nakat-ta

fact-top train-gen delay-top neg-past

‘Taroo explained the fact that the train was delayed, but in fact there was no delay’

Emotive factive predicates behave similarly.

(35) a. Taroo-wa Hanako-ga sin-da *to* kanasin-da

T-top H-nom die-past TO be.sad-past

‘Taroo was sad, saying that Hanako was dead’

- b. Taroo-wa Hanako-ga sin-da koto-acc kanasin-da  
 T-top H-nom die-past KOTO-acc be.sad-past  
 ‘Taroo was sad that Hanako was dead’

The predicate *kanasimu* ‘be-sad’ can take a *to*-CP or a *koto*-CP, and as the following examples show that the choice of a *koto*-CP invites a factivity inference.

- (36) a. Taroo-wa Hanako-ga sin-da to kanasin-da ga  
 T-top H-nom die-past TO be.sad-past but  
 zissai-wa Hanako-wa ikitei-ta  
 fact-top H-top alive-past  
 ‘Taroo was sad, saying that Hanako was dead, but in fact Hanako was alive’  
 b.#Taroo-wa Hanako-ga sin-da koto-acc kanasin-da ga  
 T-top H-nom die-past KOTO-acc be.sad-past but  
 zissai-wa Hanako-wa ikitei-ta  
 fact-top H-top alive-past  
 ‘Taroo was sad that Hanako was dead, but in fact Hanako was alive’

The following examples show the same point.

- (37) a. Taroo-wa taiyoo-ga tikyuu-no mawari-o mawatteir-u  
 T-top sun-nom earth-gen round-acc turn-pres  
 to odoroi-ta  
 TO be.surprised-past  
 ‘Taroo learned that the sun goes round the earth’

b.#Taroo-wa taiyoo-ga tikyuu-no mawari-o mawatteir-u  
 T-top sun-nom earth-gen round-acc turn-pres  
 koto-ni odoroi-ta  
 KOTO-dat be.surprised -past  
 ‘Taroo learned the fact that the sun goes round the earth’

A note on factivity inference of emotive factives is in order. Some might wonder whether the factivity inference may be cancelled, citing examples like the following.

(38) Taroo-wa Hanako-ga sin-da to uso-o osie-rare,  
 T-top H-nom die-past TO lie-acc tell-pass,  
 Hanako-ga kono-yo-ni i-na-i koto-o kanasin-da  
 H-nom this-world-in be-neg-pres KOTO-acc be.sad.-past  
 ‘Taroo was lied and told that Hanako died, and was sad that  
 Hanako is no longer alive’

In this example, the context explicitly mentions that what Taroo heard was a lie, yet the use of a *koto*-CP does not give rise to contradiction.

In the literature, the so-called factive verbs like *regret* invite the inference that the speaker believes the relevant proposition (Kiparsky and Kiparsky 1970, among others). Thus from the sentence (39) we infer (a). Klein (1975), and later Schlenker (2003) challenge the idea and claim that the sentence presupposes a weaker proposition, namely (b).

- (39) John regrets that it is raining.  
 a. It is raining.  
 b. John believes that it is raining.

They present examples like the following to support their position.

- (40) a. Falsely believing that he had inflicted a fatal wound, Oedipus regretted killing the stranger on the road to Thebes.  
 b. John wrongly believes that Mary got married, and he regrets that she is no longer single.

The examples are constructed in such a way that the previous contexts provide that the inferences that the factive verbs are supposed to give rise to are not true.

Similar effects are found with cognitive factives as well.

- (41) a. Falsely believing that he had inflicted a fatal wound, Oedipus became aware that he was a murderer. (Egré 2008)  
 b. John suffers from paranoia. He falsely believes that the police is spying on him, and what is more he knows that they are listening on his phone calls. (Abrusán 2011)

Thus, we continue to assume that the so-called factive emotives give rise a factive inference.

## 5. Informal semantics of *to*- and *koto*-CPs

We have seen so far that when a certain verb simultaneously takes a *to*-CP and a *koto*-CP, they are both arguments of the verb. We argue that a *to*-CP denotes a proposition that is a content of explanation, regret, etc, whereas a *koto*-CP denotes a fact to be explained or regretted.

Data from appositive clauses support this distinction between the

semantics of *to*- and *koto*-CPs. There are two ways to form an appositive clause modifying deverbal noun like *setumei* ‘explanation’ and *kookai* ‘regret’. One is to introduce an appositive clause introduced by the complementizer *to-iwu*. *To* is the same complementizer that is used to introduce a complement clause of a verb and *iwu* literally is a verb meaning say. The other is a bare, complementizer-less clause. The relevant examples are given below :

- (42) a. *densya-ga okure-ta to iwu setumei*  
           train-nom late-past TO say explanation  
           ‘an explanation that the train was late’  
       b. *densya-ga okure-ta setumei*  
           train-nom late-past explanation  
           ‘an explanation why the train was late’

An interesting fact about this distinction is that we find the same semantic difference we saw in verb complement clauses. When the appositive clause is introduced by the complementizer *to-iwu*, the clause is interpreted as ‘explanans’, the explanation given, while with the bare appositive, the clause is interpreted as ‘explanandum’, the fact explained

Sometimes a particular combination results in unacceptability. Compare the following :

- (43) a.?? *soko-e it-ta to-iwu kookai*  
           there-to go-past TO-say regret  
       b. *soko-e it-ta kookai*  
           there-to go-past regret  
           ‘a regret that (I) went there’

- (44) a. soko-e iku-bekide-nakat-ta to-iwu kookai  
 there-to go-past-should-not-past TO-say regret  
 ‘a regret that I should not go there’  
 b. \*soko-e iku-bekide-nakat-ta kookai  
 there-to go-past-should-not-past say regret

When an appositive clause describes a particular event in the past as in (43), a *to-iwu* appositive is not acceptable, whereas when it contains a modal expression as in (44), a complementizer-less clause is not acceptable.

This is in accordance with the behavior in verb complement clauses. The verb *kookaisuru* ‘regret’ shows a similar behavior to the noun *kookai* in that with a *to*-CP is not compatible with a clause describing a particular event in the past.

- (45) a. \*Taroo-wa soko-e it-ta to kookaisi-ta  
 T-top there-to go-past TO regret-past  
 b. Taroo-wa soko-e it-ta koto-o kookaisi-ta  
 T-top there-to go-past KOTO-acc regret-past  
 ‘Taroo regretted that he went there’

Moreover, the following examples show that modals in general are not good in *koto*-CPs.

- (46) a. Taroo-wa soko-e iku-bekidewa-nakat-ta to kookaisi-ta  
 T-top there-to go-should-neg-past TO regret-past  
 ‘Taroo regretted, saying that he should not have gone there’

- b.?\* Taroo-wa soko-e iku-bekidewa-nakat-ta koto-o kookaisi-ta  
 T-top there-to go-should-neg-past KOTO-acc regret-past

- (47) a. Taroo-wa soko-e iku-bekidewa-nakat-ta to setumeisi-ta  
 T-top there-to go-should-neg-past TO explain-past  
 ‘Taroo regretted, saying that he should not have gone there’  
 b.?\* Taroo-wa soko-e iku-bekidewa-nakat-ta koto-o setumeisi -ta  
 T-top there-to go-should-neg-past KOTO-acc explain-past

Finally, the following examples show that *koto*-CPs are not simply events.

- (48) a. Taroo-wa soko-e ka-nakat-ta koto-o kookaisi-ta  
 T-top there-to go-neg-past KOTO-acc regret-past  
 ‘Taroo regretted that he did not go there’  
 b. Taroo-wa nanimo si-nakat-ta koto-o kookaisi-ta  
 T-top anything do-neg-past KOTO-acc regret-past  
 ‘Taroo regretted that he did nothing’

## 6. Formal semantics

### 6.1. What is a fact?

A simple factive semantics of *know* says that knowing is believing something that is true.

- (49) S knows p iff S believes p and p is true.

Kratzer (2002) based on Russell (1912) claims that this invites a wrong inference. Suppose that (50)a and b are true. According to the semantics



of *know* given above, we wrongly predict that (50)c is also true.

- (50) a. The President is Trump, whose name begins with a ‘T’.
- b. John believes that the President is Taylor, and therefore the President’s name begins with a ‘T’.
- c. John knows that the President’s name begins with a ‘T’.

Kratzer proposes the semantics of *know* as follows :

- (51) S knows p iff S believes p *de re* of some fact exemplifying p.

According to Kratzer (2002 : 656), “. . . facts are particulars. The facts of our world are parts of our world. Facts, then, are not at all like propositions.”

We identify *koto*-CPs as *res* arguments in the sense of Kratzer and *to*-CPs as propositional arguments describing the contents of propositional attitudes (Cf. Özyıldız 2017). In this sense, our examples with two argument CPs are no different than examples like the following, where a *res* is an NP.

- (52) John knows of Mary that she is smart

Now we are ready to give a formal semantic analysis of the two types of predicates that take two CPs.

## 6.2. Predicates of argumentation

Let us first examine predicates of argumentation. Relevant examples are repeated below.

- (53) a. Taroo-wa [densya-ga okure-ta to] [Hanako-ga tikoku-si-ta  
 T-top train-late-past TO H-nom late-do-past  
 koto]-o setumeisi-ta  
 KOTO-acc explain-past
- b. Taroo-wa [Hanako-ga tikoku-si-ta koto]-o [densya-ga  
 T-top H-nom late-do-past KOTO-acc train-nom  
 okure-ta to] setumeisi-ta  
 late-past TO explain-past  
 ‘Taroo explained the fact that Hanako was late (by saying) that  
 the train was late’

We have not discussed the basic word order between *to*- and *koto*-CPs. Without having enough evidence on this issue, we tentatively assume that a *to*-CP is the first argument of a verb.

We argue that *to*-CPs denote sets of eventualities and *koto*-CPs particular facts.

$$(54) \llbracket \text{Hanako-ga tikokusi-ta koto} \rrbracket = \iota f. \text{late}(\text{Hanako})(f)(w_0)$$

$$(55) \llbracket \text{densya-ga okureta to} \rrbracket = \lambda s \lambda w. \text{late}(\text{the-train})(s)(w)$$

The semantics of the verb *setumeisuru* is given below :

- (56) For all  $f \in D_s$ ,  $p \in D_{\langle v, st \rangle}$ ,  $x \in D$ ,  $w \in D_s$ ,  
 $\llbracket \text{setumeisuru} \rrbracket (p)(f)(x)(w) = 1$  iff  $\exists R_{\text{acquaintance}}[R(x)(f)(w)]$  & for  $\forall w'$   
 compatible with  $x$ 's explanation in  $w$ ,  $\exists s. p(s)(w') = 1$  &  $\exists R(f)(s)$ .

### 6.3. Emotive factives

Finally, let us look at emotive factives. Again relevant sentences are

repeated here.

- (57) a. Taroo-wa zibun-ga baka-dat-ta to soko-e it-ta  
 T-top self-nom fool-be-past TO there-to go-past  
 koto-o kookaisi-ta  
 KOTO-acc regret-past
- b. Taroo-wa soko-e it-ta koto-o zibun-ga  
 T-top there-to go-past KOTO-acc self-nom  
 baka-dat-ta to kookaisi-ta  
 fool-be-past TO regret-past  
 ‘Taroo regretted that he went there, (saying that) he was foolish’

Heim (1992) first introduces a comparative semantics for predicates like *want*, as in the following :

- (58)  $\llbracket \text{want} \rrbracket (p)(x)(w) = 1$  iff for  $\forall w'$  compatible with what  $x$  believes in  $w$ , every  $p$ -worlds maximally similar to  $w'$  is more desirable to  $x$  than any non- $p$ -world maximally similar to  $w'$ .

Following Heim and Villalta (2008), we extend this analysis to Japanese emotive factives and propose the following :

- (59) For all  $f \in D_s$ ,  $p \in D_{\langle v, st \rangle}$ ,  $x \in D$ ,  $w \in D_s$ ,  
 $\llbracket \text{kookaisuru} \rrbracket (w)(f)(p)(x) = 1$  iff  $\exists R_{\text{acquaintance}}[R(x)(f)(w)]$  &  $\forall w'$   
 compatible with  $x$  believes in  $w$ ,  $\exists s$ .  $p(s)(w') = 1$  &  $\exists R(f)(s)$  &  
 every non- $f$ -worlds maximally similar to  $w'$  is more desirable to  $x$   
 than any revised world which is a  $f$ -world maximally similar to  $w'$ .

The semantics of *to*-CPs and *koto*-CP remain the same. The former denotes propositions and the latter facts.

## 7. Concluding remarks

We have seen certain CP taking predicates that may take a *to*-CP or a *koto*-CP as their complements. Among those predicates, we have noted that there are predicates that are like double object verbs in that they seemingly take two CPs. We argued that they are both arguments but enter into different semantic interpretations. We then gave a formal semantic analysis of these predicates, together with the semantics of *to*-CPs and *koto*-CPs.

Our semantics for the two types of double CP verbs is quite different from each other, as predicates of argumentation refer to doxastic alternatives whereas emotive factives need comparison among certain worlds. We do not know why these two types of verbs form a class in taking two argument CPs.

Another interesting issue that we have not discussed much is the size of CPs. We have called both types of complement clauses CPs, as they seem to contain a complementizer. On the other hand, we have given a different semantics for the two CPs. Is this simply due to the choice of the complementizer alone? Or is there a deeper explanation for this distinction? The compatibility with embedded modals suggests the latter possibility. They may be of different sizes.

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